Development of a High Throughput Robot-aided Cell Injection System for Human Cells

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Abstract

Few of the current injection technologies can be applied to those human cells whose diameters are ranged about 10 – 25 μm only. This paper reports our most recent effort in developing a robot-aided microinjection system to solve the challenging problem of automated injection on human cells. A unique microfluidic cell holding chip is designed and fabricated to trap the single cells in the predefined docking area. Imaging processing technique is used to recognize automatically the target cells to be injected. A microrobot system equipped with a micropipette is used to perform the injection tasks on these target cells. Injection experiments on human embryonic stem cells (hESCs) (ranged about 17 – 25μm) are performed to demonstrate the effectiveness of the proposed microinjection system.
About the Speaker

Yu Ting, Chow received his B.Sc. in Applied Physics from Department of Physics, M.Sc. in Electronic Engineering from Department of Electronic Engineering and M.Phil. in Physics from Department of Physics, all in Hong Kong University of Science and Technology. He is a Ph.D. candidate in Department of Mechanical and Biomedical Engineering at City University of Hong Kong. His current research focuses on developing cell manipulation system for mammalian cells in small scale.

All are welcome!
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